Multi-Function Ground Resistance Tester Model 6470

Now measure ground resistance, soil resistivity and bonding resistance with one instrument!

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The Digital Ground Resistance Tester Model 6470 performs grounding resistance, soil resistivity, bonding tests (2- and 4-wire Resistance) and earth coupling measurements. This direct reading tester measures from 0.01 to 99.99kΩ, and is auto-ranging, automatically seeking out the optimum measurement range test current and test frequency. Easy-to-use — simply connect the leads, select the test mode, Press-to-Measure and read the results. Up to 512 test results can be stored in internal memory for later recall to the display or download to a PC for analysis and hard copy reports.

The large LCD is easy-to-read and indicates grounding electrode resistance, test voltage, current and frequency. It also measures individual test electrode resistance, battery status and more depending on the measurement.

The Model 6470 is Cat IV rated to 50V and is over voltage protected to greater than 250V against accidental connection to live circuits. Live voltage, if present, is also displayed on screen. In the event of a system fault, the Model 6470 can withstand 250V between any two terminals.

Also included, are manual and automatic test frequency selection from 40 to 513Hz; user selectable Soil Resistivity test method (Wenner or Schlumberger); user selectable 2-Wire or 4-Wire Bond Resistance test and a Earth coupling test feature.

Additional features of the Model 6470 include: a heavy-duty field case sealed against dust and water when closed (the test button is also sealed against the elements); NiMH rechargeable batteries. An external charger powered from 120V/230V 50/60Hz is included. The Model 6470 can also be powered and charged from a 12V vehicle battery. Testing while recharging is allowed.

The Ground Resistance Tester Model 6470 is rugged, easy-to-use and ideal for maintenance crews and contractors performing numerous tests. It exceeds mechanical and safety specifications for shock, vibration and drop tests called out in IEC standards. The adjustable test frequency and filtering provide for rejection of high levels of interference, allowing it to be used under difficult conditions such as the presence of high stray currents that normally affect accuracy, and measured auxiliary rod resistance enables the user to optimize measurements in difficult soil environments.

Features

- 3-Point Fall-of-Potential measurement with manual or automatic frequency selection
- 4-Point soil resistivity measurement with automatic calculation of Rho (ρ) and user selection of the Wenner or Schlumberger test method
- 2- and 4-Wire DC resistance measurement (Bond testing) with automatic polarity reversal
- 3-Point earth coupling measurement
- Automatic frequency scan from 40 to 513Hz for optimum test accuracy in electrically noisy environments
- Selectable test voltage limit of 16 or 32V with up to 250mA of test current
- Automatic recognition of all electrode connections and measurement of their resistance value
- Auto-off power management
- Optically isolated USB communication
- Remote set up and operation of all measurements using DataView® software supplied
- Automatic report generation
- Rechargeable NiMH batteries from wall charger or vehicle power
- Rugged dustproof and rainproof field case – IP54 rated in closed position
- IEC 61557 parts 4 and 5 compliant
- Includes DataView® software for data storage, real-time display, analysis, report generation and system configuration

Applications

- **3-Point measurements of resistance to ground of ground rods and grids.** 3-Point measurements are generally used when the electrode or grid can be easily disconnected.
- **4-Point tests or soil resistivity measurements.** Locating areas of lowest soil resistivity is essential for achieving an economical grounding installation.
- **Touch and step potential testing measurements.** These tests are recommended when the ground cannot be disconnected, where ground faults are highly likely to occur, or when the "footprint" of grounded equipment (the outline of the part of equipment in contact with the earth) is comparable to the size of the ground to be tested.
- **2- or 4-Wire tests for continuity tests on bonding or on grounding systems.** This test is a DC resistive test using 250mA or more and is used to check bonding of all connection points on the ground system.
- **Earth coupling measurement and display.** Used to estimate the influence of two earth resistance systems that are not connected to each other.

Model 6470 quickly checks ground rod resistance with its Connect – Press – Read approach

Specifications

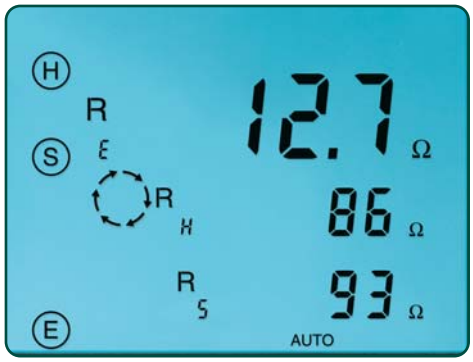
MODEL	6470
ELECTRICAL	
3-Point Measurement	
Range (Auto-Ranging)	0.01Ω to 99.99kΩ
Resolution	0.01Ω to 100Ω
Test Voltage	Nominal 16 or 32V user selectable
Resistance Measurement Frequency	41 to 513Hz user selectable or automatic selection
Test Current	Up to 250mA
Accuracy	±2% of Reading + 1ct
Earth Coupling Measurement	Yes
Soil Resistivity 4-Point Measurement	
Test Method	Wenner or Schlumberger selectable with automatic calculation of test results in Ω-meters or Ω-feet
Range (Auto-Ranging)	0.01 to 99.99kΩ
Resolution	0.01 to 100Ω
Test Voltage	16 or 32V user selectable
Frequency	From 41 to 128Hz selectable
External Voltage Measurement	
Range (Auto-Ranging)	0.1 to 65.0V – DC to 450Hz
Accuracy	2% of Reading + 3cts
Resistance Measurement (Bond Testing)	
Measurement Type	2-Point (with lead resistance compensation) or 4-Point (Kelvin sensing) user selectable
Range (Auto-Ranging)	2-Point 0.01Ω to 99.9kΩ; 4-Point 0.001Ω to 99.99kΩ
Accuracy	±2% of Reading + 2cts
Test Voltage	16VDC (+, – or auto polarity)
Test Current	Up to 250mA max
Data Storage	
Memory Capacity	512 test results
Communication	Optically isolated USB
Automatic Report Generation	Yes – tabular listings and Fall-of-Potential plots
Power Source	Eight 1.2V NiMH rechargeable batteries
Recharging Source	110/220 50/60Hz external charger with 18VDC, 1.9A output or 12 VDC vehicle power
MECHANICAL	
Test Lead Connection	4mm recessed banana jacks
Mechanical Shock	Per EN 61557
Vibration Test	Per EN 61557
Drop Test	Per EN 61557
Dielectric Test	3kV 50/60 Hz
Dimensions	10.7 x 9.76 x 5.12" (272 x 248 x 130mm)
Weight	7.5 lbs (3.5kg)
Case	Polypropylene
Index of Protection	IP53 with cover closed
DISPLAY	
Display Type	Custom 256 segment multi-line LCD
Backlight	Blue electroluminescent
COMMUNICATION	
Software	DataView® graphing, analysis and reporting software
ENVIRONMENTAL	
Operating Temperature	14° to 122 °F (-10° to 55°C)
Storage Temperature	-40° to 158°F (-40° to 70°C)
SAFETY	
Safety Rating	EN61010-1 50V Cat IV, Pollution Degree 2
Double Insulation	Yes
CE Mark	Yes

Functional Displays

4-Point Bond Test

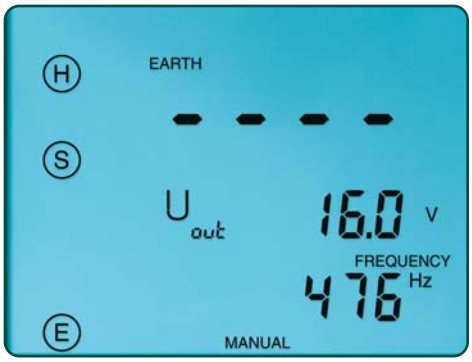
The 4-Point (Kelvin sensing) Bond test shows lead connections, bond resistance test results, test voltage and current.

3-Point Fall-of-Potential Test



The 3-Point Fall-of-Potential test displays test lead connection, grounding rod resistance and test electrode resistances. Test voltage, current or frequency can also be displayed with a button press.

Frequency Selection

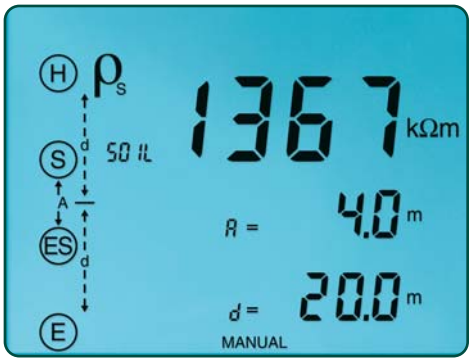


The Frequency selection screen displays selected frequency and voltage for the test as well as lead connection.

Data Storage

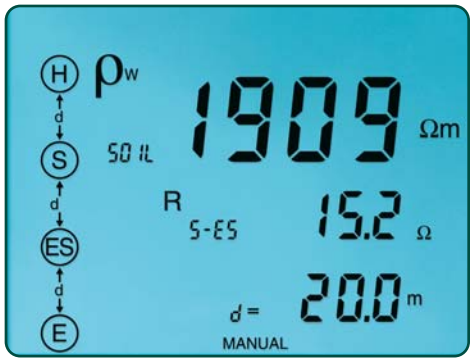
Displays test results stored at a specific memory location as well as the test function.

Schlumberger Test



The Schlumberger test displays test lead connection, soil resistivity test results (ρ) and electrode spacing.

Wenner Test



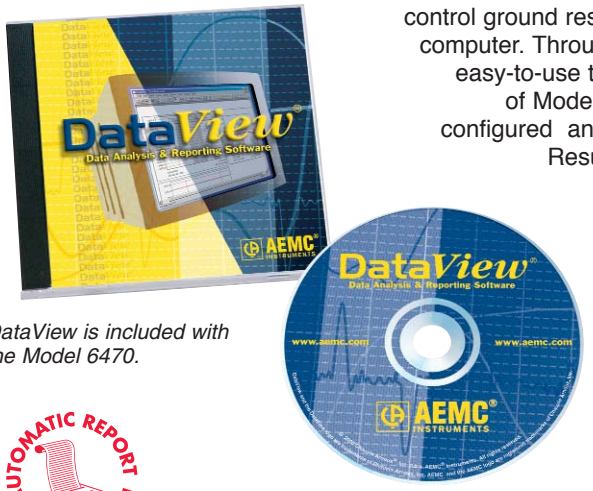
The Wenner test displays test lead connection, soil resistivity test results (ρ), electrode spacing and resistance.

DataView®

Data Analysis and Reporting Software

Configure all functions of the Model 6470

- Run tests and analyze real-time data from your PC
- Configure all test functions and parameters from your PC
- Customize views, templates and reports to your exact needs
- Create and store a complete library of configurations that can be used with the Model 6470 as needed
- Display Fall-of-Potential plots, tabular listings of test results, resistance vs. frequency plots, soil resistivity and bonding tests
- Print reports using standard or custom templates you design



DataView is included with the Model 6470.

The DataView software provides a convenient way to configure and control ground resistance tests from your computer. Through the use of clear and easy-to-use tabbed dialog boxes, all of Model 6470 functions can be configured and tests can be initiated. Results can be displayed in real time and stored in your PC. Reports may be printed along with the operator's comments and analysis.

AUTOMATIC REPORT GENERATION

DataView® Minimum System Requirements:

- Windows®2000/XP/Vista
- 128MB of RAM (256MB recommended) for Windows®2000
  256MB of RAM for Windows®XP
- 35MB of hard disk space (200MB recommended)
- CD-ROM drive

Fall-of-Potential Plot

Model _____
Serial # _____

Name of Operator _____
Location _____ Date _____
Ground System Type: Single Rod ☐ Rod Depth _____ ft
Multiple Rods (Grid) ☐ Longest Diagonal Dimension _____ ft
Z Electrode Distance _____ ft

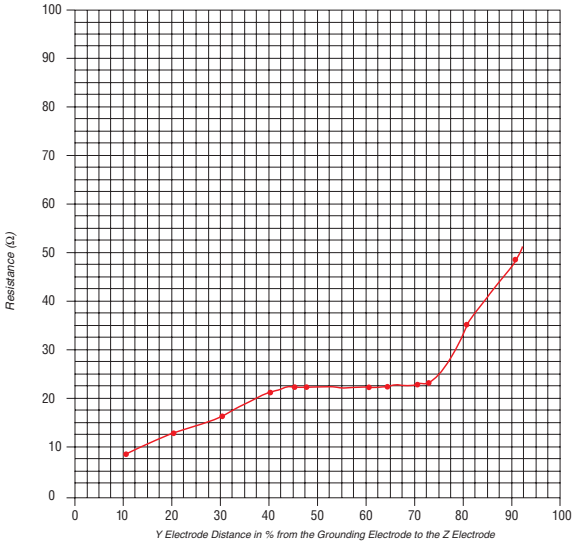
%	Voltage Electrode (Y) distance from Ground Rod under Test (X) FEET	Measured Resistance OHMS
90	180	49.3
80	160	34.2
72	144	22.1
70	140	22.1
62	124	21.8
60	120	21.8
52	104	21.6
50	100	21.6
40	80	20.4
30	60	16.2
20	40	12.8
10	20	9.1
0		

Test Conditions

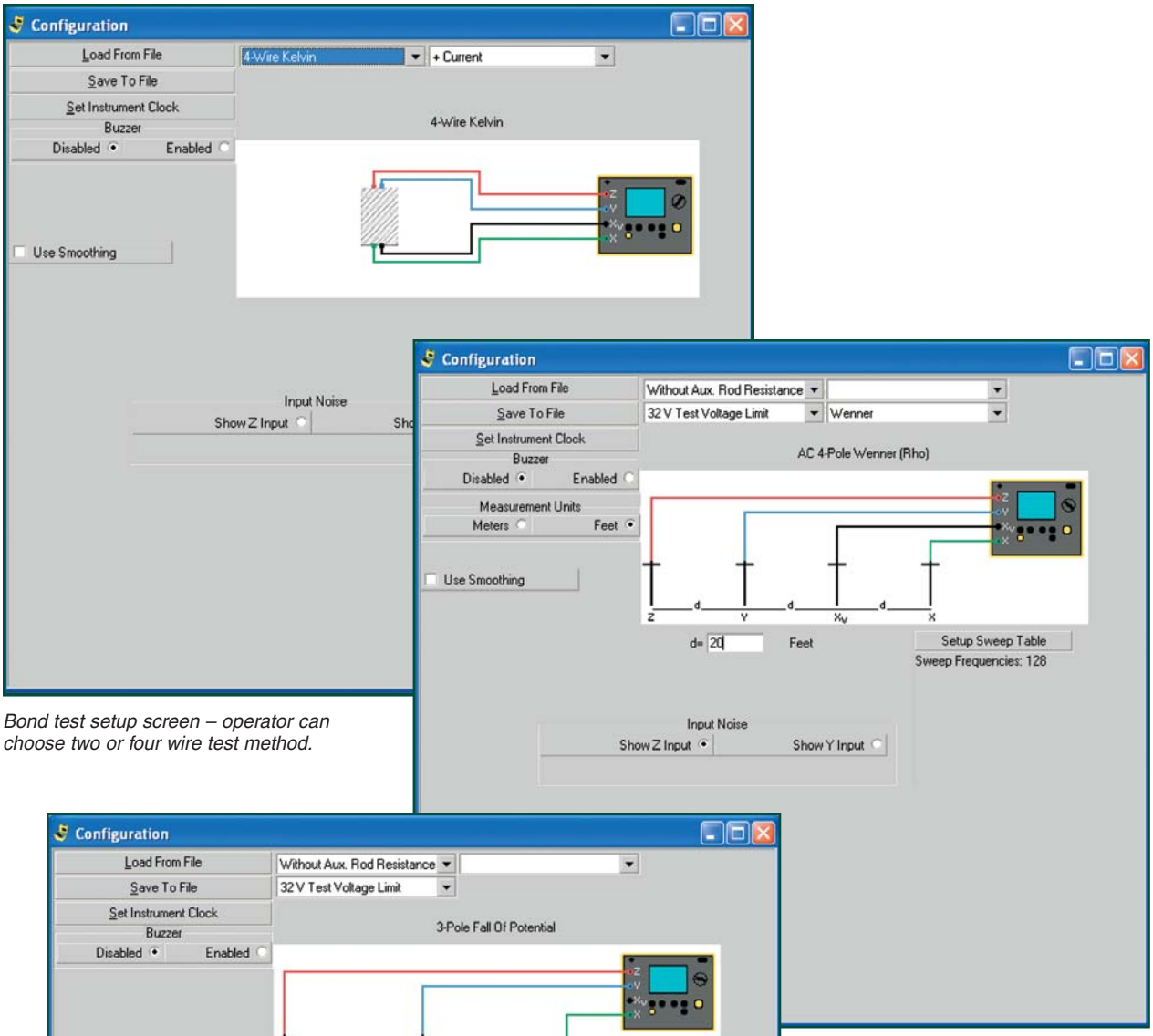
Temp: _____ Soil: ☐ Moist ☐ Dry

Soil Type

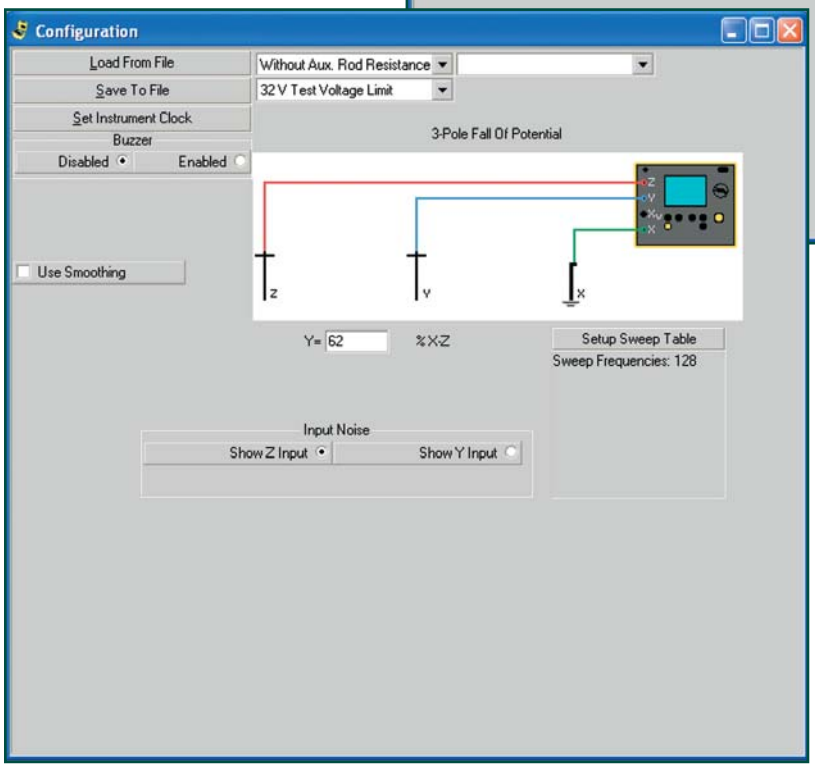
☐ Loam ☐ Sand & Gravel ☐ Shale ☐ Clay ☐ Limestone
☐ Sandstone ☐ Granite ☐ Slate ☐ Other _____



DataView Functional Displays



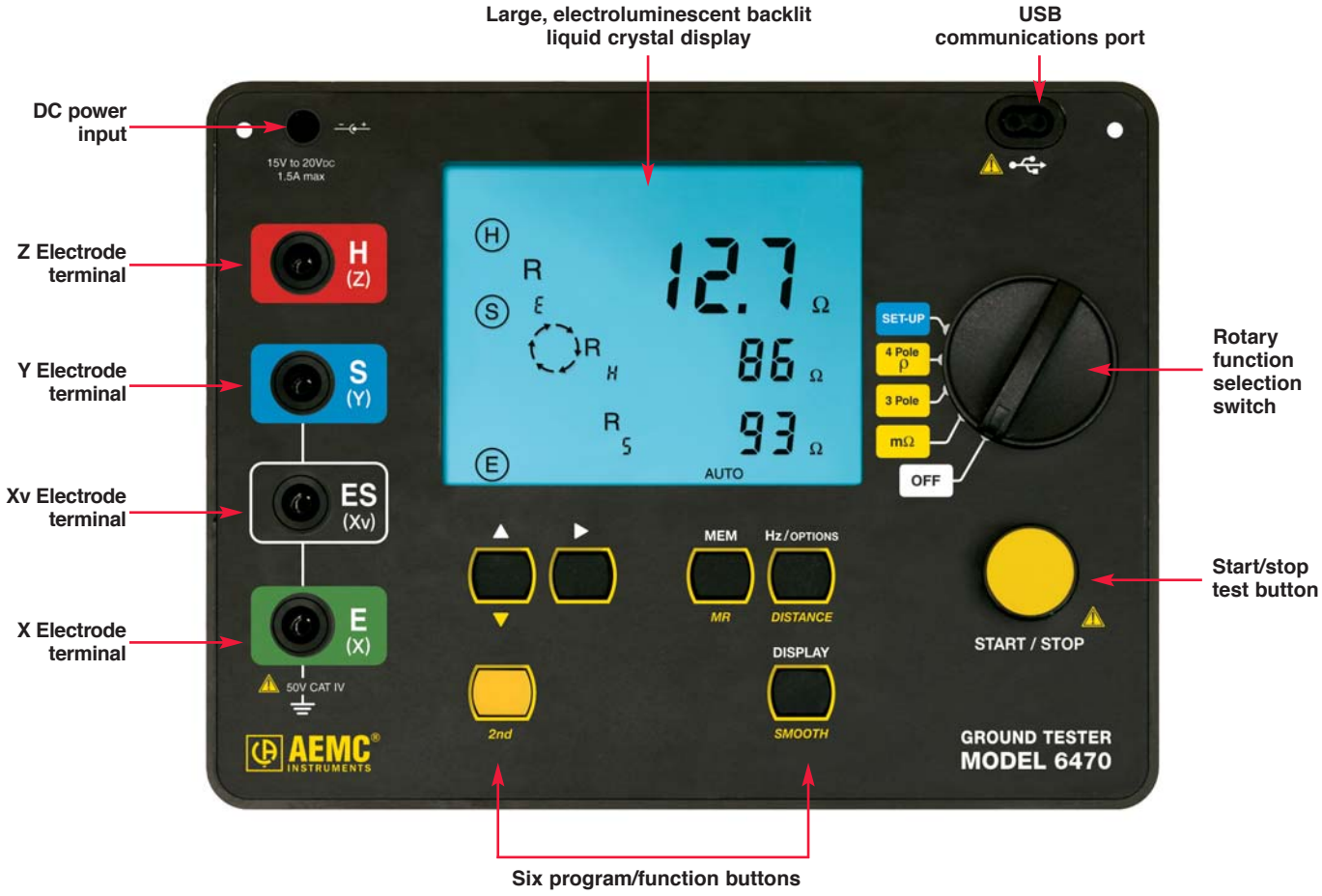
Bond test setup screen – operator can choose two or four wire test method.



3-Point Fall-of-Potential test setup screen – operator can select test voltage, manually select the test frequency or have the instrument automatically select the best test frequency. Distance for Y electrode can also be entered manually and a Fall-of-Potential plot generated.

Soil resistivity test setup screen – operator can select either the Wenner or Schlumberger test method, select test voltage and frequency and program the spacing between electrodes in either feet or meters.

Construction



Model 6470 includes meter, NiMH batteries, optically isolated USB cable, DataView® software, external battery charger, AC power cord and user manual.

Multi-Function Ground Resistance Tester Model 6470 Kit (500 ft kit shown) Includes meter, NiMH batteries, optically isolated USB cable, DataView® software, external battery charger, AC power cord, one 30 ft green wire, one each 500 ft red and blue wire, one each 100 ft black and green wire, set of five spade lugs, four 14.5" auxiliary electrodes, tape measure, carrying case and user manual
Catalog #2135.04

Accessories

Test Kit for 3-Point testing includes two 150 ft color-coded leads on spools (red and blue), one 30 ft lead (green), two 14.5" T-shaped auxiliary ground electrodes, one set of five spade lugs, 100 ft tape measurer and carrying bag.
Catalog #2135.35

Test Kit for 4-Point testing includes two 300 ft color-coded leads on spools (red and blue), two 100 ft color-coded leads (green and black), four 14.5" T-shaped auxiliary ground electrodes, one set of five spade lugs, 100 ft tape measurer and carrying bag.
Catalog #2135.36

Test Kit for 4-Point testing includes two 500 ft color-coded leads on spools (red and blue), two 100 ft color-coded leads (green and black), one 30 ft lead (green), four 14.5" T-shaped auxiliary ground electrodes, one set of five spade lugs, 100 ft tape measurer and carrying bag.
Catalog #2135.37

Test Kit for 3-Point testing (supplemental for 4-Point testing) includes two 100 ft color-coded leads, one 30 ft lead (green), two 14.5" auxiliary electrodes and soft carrying bag for use with kit number 2135.35 when 4-Point soil resistance testing is necessary
Catalog #2135.38

ORDERING INFORMATION	CATALOG NO.
Ground Resistance Tester Model 6470 (3-Point, 4-Point, Bond Test, Digital, Rechargeable Battery, DataView® software) Includes meter, NiMH batteries, optically isolated USB cable, DataView® software, external battery charger, AC power cord, carrying case and user manual	**Cat. #2135.01**
Ground Resistance Tester Model 6470 Kit (150 ft) Includes meter, NiMH batteries, optically isolated USB cable, DataView® software, external battery charger, AC power cord, one each 150 ft red and blue wire spools, one 30 ft green wire, set of five spade lugs, two auxiliary electrodes, tape measure, carrying case and user manual	**Cat. #2135.02**
Ground Resistance Tester Model 6470 Kit (300 ft) Includes meter, NiMH batteries, optically isolated USB cable, DataView® software, external battery charger, AC power cord, one each 300 ft red and blue wire spools, one each 100 ft black and green wires, s et of five spade lugs, four auxiliary electrodes, tape measure, carrying case and user manual	**Cat. #2135.03**
Ground Resistance Tester Model 6470 Kit (500 ft) Includes meter, NiMH batteries, optically isolated USB cable, DataView® software, external battery charger, AC power cord, one 30 ft green wire, one each 500 ft red and blue wire spools, one each 100 ft black and green wires, set of five spade lugs, four auxiliary electrodes, tape measure, carrying case and user manual	**Cat. #2135.04**
Accessories (Optional)	
25Ω Calibration Checker	Cat. #2130.59
Tape Measure (100 ft)	Cat. #2130.60
Test Kit for 3-Point testing (includes two 150 ft color-coded leads on spools (red/blue), one 30 ft lead (green), two 14.5" T-shaped auxiliary ground electrodes, set of five spade lugs, 100 ft tape measure and soft carrying bag)	Cat. #2135.35
Test Kit for 4-Point testing (includes two 300 ft color-coded leads on spools (red/blue), two 100 ft color-coded leads (hand tied green/black), four 14.5" T-shaped auxiliary ground electrodes, set of five spade lugs, 100 ft tape measure and soft carrying bag)	Cat. #2135.36
Test Kit for 4-Point testing (includes two 500 ft color-coded leads on spools (red/blue), two 100 ft color-coded leads (hand tied green/black), one 30 ft lead (green), four 14.5" T-shaped auxiliary ground electrodes, set of five spade lugs, 100 ft tape measure and soft carrying bag)	Cat. #2135.37
Ground Test Kit for 3-Point testing (Supplemental for 4-Point testing – includes two 100 ft color-coded leads, one 30 ft lead (green), two 14.5" T-shaped auxiliary ground electrodes and soft carrying bag)	Cat. #2135.38

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